Chapter 12
Promoting Onshore Planners’ Ability to Address Offshore Safety Hazards

Ann Britt Skjerve
Institute for Energy Technology, Norway

Grete Rindahl
Institute for Energy Technology, Norway

Sizarta Sarshar
Institute for Energy Technology, Norway

Alf Ove Braseth
Institute for Energy Technology, Norway

ABSTRACT

With new generations of Integrated Operation, the number of offshore staff may be reduced and more tasks allocated to onshore staff. As a consequence, onshore planners may increasingly be required to address safety hazards when planning for task performance offshore. The chapter addresses the question of how onshore planners’ ability to address offshore safety hazards during planning of maintenance and modification tasks can be promoted by use of visualization technology. The study was performed using the IO Maintenance and Modification Planner. Eight domain experts participated in the study, performing in all thirteen scenarios of 30-40 minutes duration. Data was obtained from system logs, participant interviews, questionnaires, and expert judgments. The outcome of the study suggested that visualisation of planned jobs on a geographical representation of the decks at the installation, in combination with indications of associated safety hazards, served to promote onshore planners ability to address offshore safety hazards.

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INTRODUCTION

Performance of maintenance and modification activities is of key importance for ensuring commercial success in the petroleum industry. The overall objective of maintenance is to “…increase the profitability of the operation and optimize the total life cycle cost without compromising safety or environmental issues” (Khan and Haddara, 2003, p. 561). The overall objective of modifications is likewise to increase the profitability of the operation. Modifications typically aim at providing an installation with increased capacity, e.g., to perform tasks faster and/or with new functionality.

At the Norwegian Continental Shelf (NCS), petroleum companies gradually introduce the operational concept Integrated Operation (IO). IO has been defined as “…the integration of people, processes, and technology to make and execute better decisions quicker” (Lilleng and Sagatun, 2010, p. 2). It implies that real-time data from offshore installations are brought onshore, and thus builds premises for development of new integrated work processes (Holst and Nystad, 2007; OLF, 2005; 2008). IO may look very different at different installations. Edwards et al. (2010) report that they generally recognize IO on an installation based on the introduction of three changes:

1. A move to a real time or near real time way of working
2. The connection of one or more remote sites or teams to work together
3. A move to more multidiscipline way of working.

The introduction of IO implies that the traditional ways of working is substituted by IO ways of working (Ringstad and Andersen, 2006; 2007). IO tends to imply that tasks are moved from offshore to onshore. The tasks moved from offshore are often associated with administration and planning. In many companies, the introduction of IO implies the establishment of a decision-making land organisation, collaborating with an executing offshore organisation (Dørvoldsmo et al., 2007). IO, further, tends to involve increased outsourcing of work to contractors and other third parties, as well as closer integration between operator and contractor tasks (Skjerve and Rindahl, 2010). In future generations of IO, the number of tasks performed onshore is likely to further increase due to technology advances and increased maturity of IO organisations (St. Meld. Nr. 38). This will probably lead to fewer positions offshore. Means for establishing increased onshore understanding of offshore situations and risks will thus be of key importance.

At petroleum installations where IO presently is introduced, detailed planning of maintenance and medication activities are typically initiated by onshore planners, engaged in creating plans covering maintenance activities that should be carried out during a particular 2 week period, i.e., 14-day plan. While preparing 14-day plans, the onshore planners mainly focus on ensuring that the resources required are available. Today, the potential safety hazards associated with a plan are typically first addressed by the offshore staff 24-hours prior to job execution. The term hazard - in the following also referred to as a safety hazard – is defined as “…a situation in which there is actual or potential danger to people or the environment” (Storey, 1996, p. 33). When onshore staff detects hazards, they will re-prioritize the planned jobs, and send a subset of the jobs back onshore for re-planning. If, over time, many jobs have to be re-planned in order to meet safety requirements, this may result in a significant backlog, i.e., jobs waiting to be performed. If jobs remain in the backlog too long, new safety hazards may arise, e.g., because needed equipment stops functioning. An organisation, whose planners are able to address safety hazards also in the earlier stages of the planning process, would improve its capability both for safe maintenance and for creating plans that are realistic to meet (attainable plans), and through fewer jobs being sent back for re-planning, reduced backlog.